Space Weather Forecast

Issued on Thursday, 09 November 2023 at 12:53 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of isolated Moderate flares.
Analysis of Space Weather Activity over past 24 hours
Solar Activity: Activity has been Low with only Common-class flares observed in the last 24 hours, the largest of which came from a sunspot region near centre disc. There are currently seven sunspot regions on the visible disc. The largest region, located in the south, remains fairly stable. The most complex region, located near centre disc is the most magnetically complex and has been the main source of the common-class flare activity. The remaining regions are predominantly small, simple and stable.

No Earth-directed coronal mass ejections (CMEs) have been observed in the past 24 hours. However, material may have been released around 09/1100 UTC from a dimming event and analysis will be completed once imagery is available.

Solar Wind / Geomagnetic Activity: Solar winds showed the continued impact of fast solar winds. Wind speeds were strong fluctuating in the range 650-750 km/s. However, no data has been received from ACE since around 08/2100 UTC. As such, solar wind speeds are being approximated using DSCOVR data and the previously observed difference of 200-250 km/s between the two spacecraft readings. The total interplanetary magnetic field (IMF) has been weak. The important north-south component fluctuated weakly. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Generally Low solar activity is expected through the period, but with a chance of isolated Moderate-class flares. This risk is expected to increase slightly by Day 3 (11 Nov) due to a combination of emerging or returning regions, and the continued development of regions already on the disc.
Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections CMEs are expected in the current forecast period. Strong wind speeds are likely to continue through Day 1 (9 Nov) due to the ongoing stream of fast winds from a coronal hole. Speeds are expected to gradually decline through Days 2 and 3 (10-11 Nov). Further weak enhancement from fast winds associated with coronal holes is possible by Day 4 (12 Nov) but this is low confidence.
Geomagnetic activity expected to be initially Quiet to Unsettled (Kp 1-3) with a chance of Active intervals on Day 1. In the absence of further enhancement, activity is expected to gradually decline to predominantly Quiet (Kp 0-2) levels.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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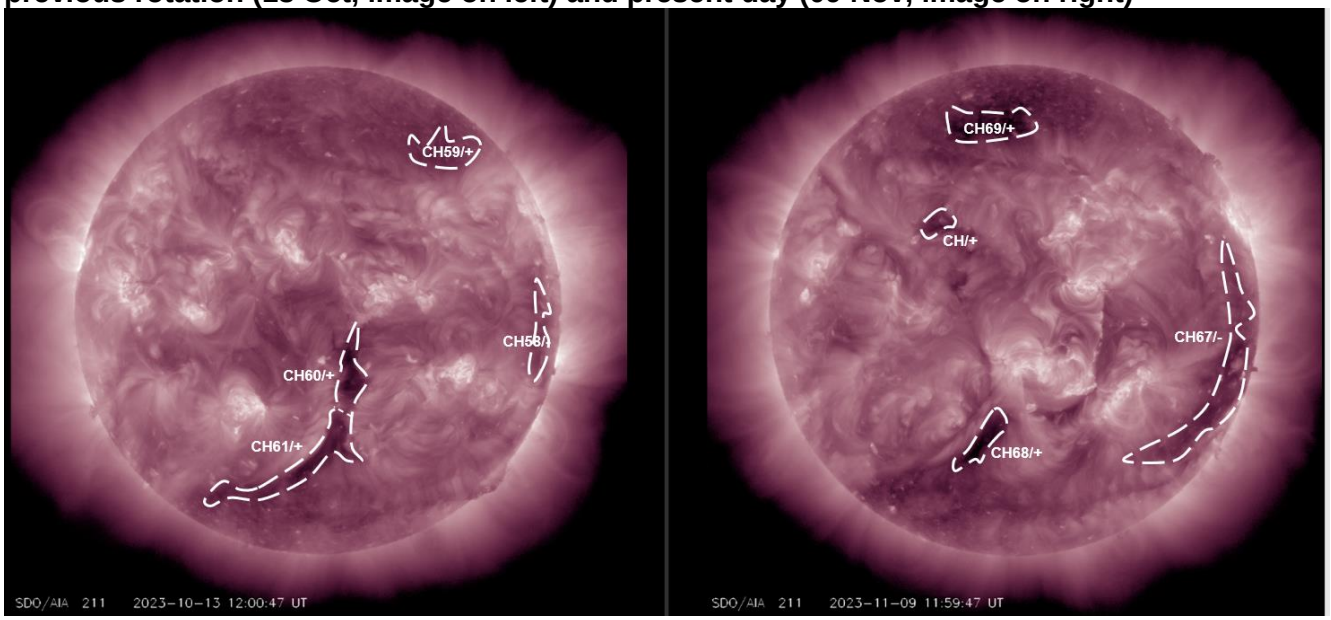
Figure 1: SDO/AIA-211 imagery showing a comparison of coronal holes between the previous rotation (13 Oct, image on left) and present day (09 Nov, image on right)



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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	2	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	40	40
Very Active	R3 to R5 X	No	1	1	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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